ESV 2005 GOVERNMENT OF CANADA STATUS REPORT

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ABSTRACT

This report presents the main program, research and regulatory accomplishments of Transport Canada since the previous report presented at ESV in 2003. Canada continues to actively pursue policy initiatives to improve the safety of Canadians and to actively participate on numerous international research and regulatory fora to advance motor vehicle as well as road safety more generally. Transport Canada is pleased that we have been instrumental in affecting safer vehicles and roads, both nationally and internationally. The department is committed to on-going collaboration with industry, foreign governments, provincial and territorial governments and a host of other stakeholders.

CANADIAN ROAD SAFETY SITUATION

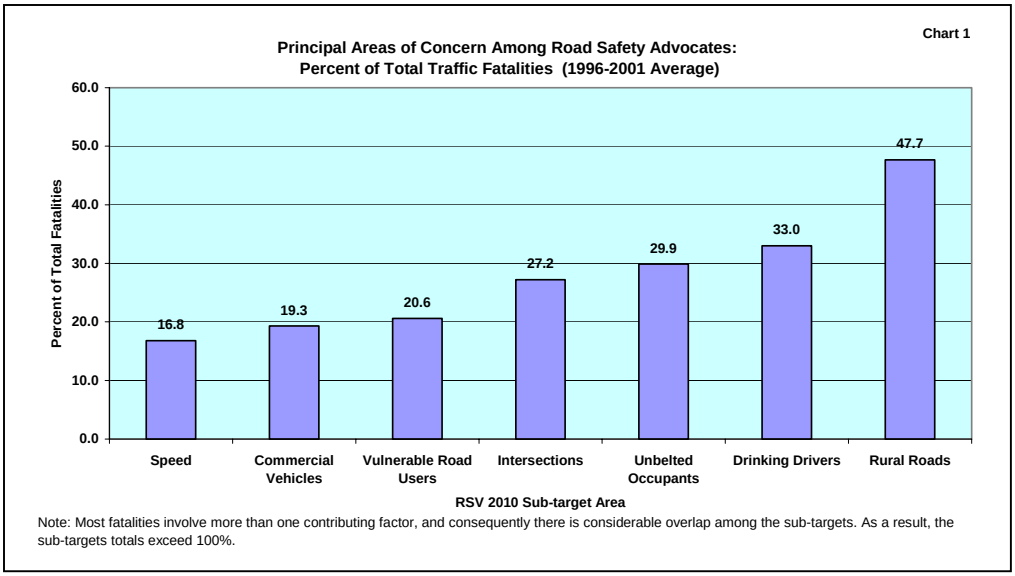
In Canada, road safety is a responsibility that is shared among the federal and provincial/territorial governments. The federal government is primarily responsible for the safety of new vehicles and inter-provincial commercial carriers, while the provincial/territorial governments have jurisdiction over the operation and maintenance of motor vehicles, road infrastructure and the development and implementation of road safety programs.

Like many other developed countries, Canada's road safety record improved greatly during the past quarter century. During this period, fatalities resulting from motor vehicle traffic collisions decreased by more than 50%, while its population not only grew by approximately 35% but also became more mobile, as the number of licensed drivers grew by approximately 50%.

Canada's Road Safety Vision 2010

Canada's national road safety plan has been in place since 1996 to address Canada's major road safety problems (see Chart 1) with the view that a more focused approach to the development and implementation of safety initiatives would be the most successful strategy to make road travel in Canada safer.

Called Road Safety Vision 2001 when it was first introduced, this national plan is supported by all levels of government as well as national public and private sector stakeholders with a strong interest in road safety. The goal of the vision is that Canada will have the safest roads in the world. The strategic objectives of this ambitious initiative are to raise awareness of road safety issues among the general public, to improve communication, cooperation and



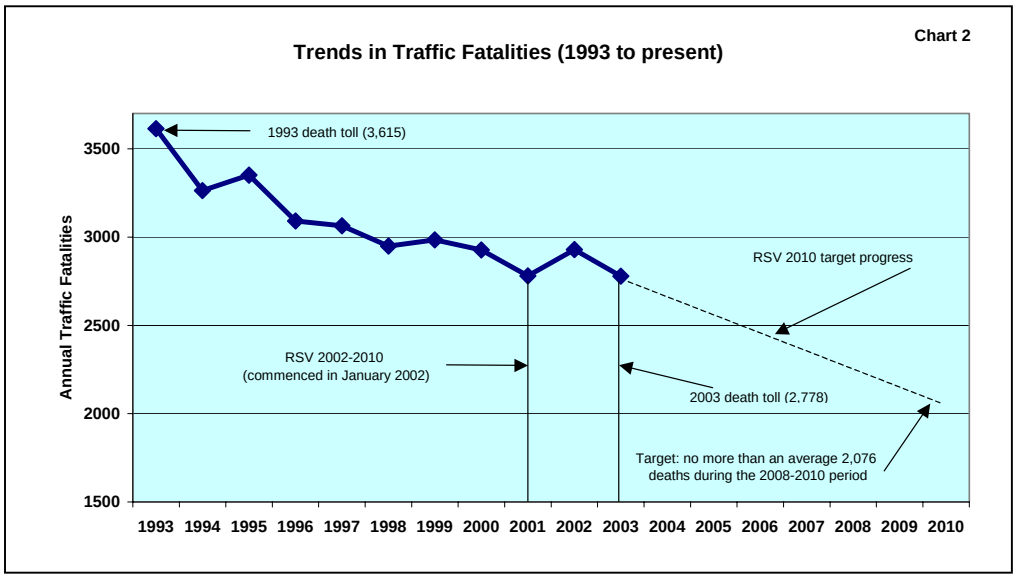
collaboration among road safety agencies, to enhance enforcement initiatives and to improve national data quality and collection practices.

The introduction of a broad range of initiatives during the 1996-2001 period, to support this national plan, was successful. Between 1996, traffic fatalities decreased by 10%, serious injuries by 16% (see Chart 2).

Some of the key initiatives that have recently been introduced in selected Canadian jurisdictions include:

- comprehensive public education and enforcement campaigns; the removal or revision of exemptions and the introduction of tougher sanctions (demerit points and increased fines) to increase seat belt and proper child restraint use;

Chart 2



In 2002, Road Safety Vision 2010 superseded Canada's inaugural national road safety plan. The successor plan retained the vision and strategic objectives of Road Safety Vision 2001, but also incorporated a national target for fatality and serious injury reductions (-30%), as well as several sub-targets aimed at curtailing the most serious collision-causing behaviors. In order to achieve the quantitative targets of the renewed vision, initiatives have been introduced that focus on increasing seat belt and proper child restraint use, and on reducing serious casualties involving drinking drivers, high-risk road users, young drivers, vulnerable road users, commercial vehicles, speed and intersections, as well as rural roadways. Six task forces, comprised of representatives from various levels of government as well as key public and private sector organizations, have assumed ownership of the various targets as well as for developing and implementing strategies to meet the target objectives. These task forces operate under the auspices of the Canadian Council of Motor Transport Administrators, a body which coordinates federal, provincial and territorial efforts to improve the road transportation system in Canada.

- the introduction of public education and awareness initiatives and programs that targeted predominantly younger and higher-risk driver groups, increased police enforcement efforts through overtime, varying shift times and increasing checkpoints and blitzes at strategic locations, amended Highway Traffic Acts that resulted in the introduction of harsher measures for persons charged with impaired driving (administrative licence suspensions, financial penalties, vehicle impoundment and ignition interlock programs) to reduce the incidence of drinking and driving; black spot analysis, safety messaging and improved road signing;
- enhanced enforcement initiatives on selected high-traffic corridors, focused enforcement efforts on such high-risk issues as stop-sign violations, non-use of seat belts, speeding, impaired driving, and school bus safety, and two national public education and enforcement campaigns in the spring and fall that were carried out under the auspices of the Canadian Association of Chiefs of Police to make rural road travel safer; and

- education and awareness efforts aimed at getting motorists to slow down and to drive more defensively at intersections, focused Canada-wide spring and fall enforcement campaigns that targeted speed and intersection safety, continually upgrading signage, traffic lanes and traffic signals at intersections and the introduction of red light cameras at high-risk intersections to make intersections more safe for all road users.

The collaborative efforts of governments, these task forces and their road safety partners during the first two years of this national plan have resulted in continued progress. During 2003, the most recent year for which data are available, overall road user fatalities decreased by almost 7% and there was considerable improvement among some of the most critical road safety areas (seat belt use, drinking driving, rural roads and intersections). The figures in Table 1 describe the quantitative targets intrinsic to Road Safety Vision 2010, as well as the progress that has been achieved to 2003. Progress among these sub-targets is measured against the average number of fatalities and serious injuries that occurred during the timeframe of the inaugural national road safety plan (1996-2001).

Table 1

Road Safety Vision 2010 National Target, Sub-Targets, Baseline Data & Target Objectives

	Fatalities				Serious Injuries			
National Target	**1996-2001 Baseline Figure**	**2003 (1) Total**	**2003 Progress (% change)**	**2008-2010 Target**	**1996-2001 Baseline Figure**	**2003 Total**	**2003 Progress (% change)**	**2008-2010 Target**
A **30%** decrease in the average number of road users fatally or seriously injured during the 2008-2010 period (compared to 1996-2001).	**2,966**	**2,766**	**-6.7**	**2,076**	**18,246**	**17,707**	**-3.0**	**12,772**
Sub-Targets								
A **40%** decrease in the number of unbelted fatally or seriously injured occupants.	**897**	**822**	**-8.3**	**538**	**2,446**	**2,491**	**1.8**	**1,468**
A **40%** decrease in the percentage of road users fatally or seriously injured in crashes involving drinking drivers.	**33%***	**29.6%**	**-10.3 (2)**	**19.8%**	**18.7%****	**17.5%**	**-6.4 (2)**	**11.2%**
A **40%** decrease in the number of road users fatally or seriously injured on rural roadways.	**1,421**	**1,263**	**-11.1**	**853**	**6,595**	**5,657**	**-14.2**	**3,957**
A **20%** decrease in the number of young drivers/riders (those aged 16-19 years) killed or seriously injured in crashes.	**161**	**156**	**-3.1**	**129**	**926**	**960**	**3.7**	**740**
A **20%** decrease in the number of road users killed or seriously injured in speed-related crashes.(3)	**609**	**645**	**5.9**	**487**	**2,413**	**2,403**	**-0.4**	**1,930**
A **20%** decrease in the number of road users killed or seriously injured in intersection-related crashes.(3)	**894**	**783**	**-12.4**	**715**	**7,856**	**7,113**	**-9.5**	**6,284**
A **30%** decrease in the number of fatally or seriously injured vulnerable road users (pedestrians, motorcyclists and cyclists).	**613**	**601**	**-2.0**	**429**	**3,628**	**3,300**	**-9.0**	**2,540**
A **20%** decrease in the number of road users killed or seriously injured in crashes involving commercial vehicles.	**581**	**578**	**-0.6**	**465**	**1,690**	**1,794**	**6.2**	**1,352**
A **20%** decrease in the number of road users killed or seriously injured in crashes involving high-risk drivers. (4)								

(1) 2003 figures are provisional.

*Estimates of the percent of road user fatalities involving drinking drivers on public roads during the 1996-2001 period.

**Estimates of the percent of drivers in serious crashes involving alcohol on public roads during the 1996-2001 period. These percentages exclude drivers from BC, YK & NWT.

(2) 2002 data

(3) Only one sub-target exists for speed and intersections casualty reductions. However, in order to identify baseline and target fatality and serious injury reductions, the speed and intersection figures were shown separately.

(4)High-risk driver (HRD) baseline figures will be provided once all jurisdictions are able to identify victims of crashes involving drivers who meet the definition of an HRD.

Canada currently ranks 7th among Organisation for Economic Cooperation and Development member countries when comparisons are made on a deaths per billion vehicle kilometres traveled basis (2003 figures).

COLLISION DATA

A program of in-depth collision investigations is carried out by six contracted research teams, based in universities across Canada, and by Transport Canada staff located in the National Capital Region. The work supports the Directorate's research and regulatory development programs, actively monitors high-profile traffic safety incidents across Canada, and provides a mechanism for rapid response to such incidents.

Current activities comprise directed studies focused on several safety issues, and a program of special collision investigations which captures incidents of interest that fall outside of the criteria for particular directed studies. On-going directed studies are investigations of front air bag deployment crashes, moderately severe side impacts, side air bag deployment crashes, and frontal collisions involving fully restrained rear seat occupants. Special collision investigation topics include school bus and motor coach crashes, air bag or seat belt induced fatal and serious injuries, collisions involving event data recorders, and collisions testing the crashworthiness of child restraints.

Transport Canada and one of the university-based collision investigation teams are each undertaking pilot studies investigating the causes of fatal motor vehicle collisions. The studies involve compilation of data on human, vehicle and environmental factors involved in collisions and use a multi-disciplinary approach to assess the principal causal factors. Both retrospective data collection and on-scene, in-depth, collision investigation techniques are being used to compare the effectiveness of the two approaches.

Electronic Traffic Related Data Collection

In partnership with selected provincial governments and police agencies, Transport Canada is conducting a demonstration project of a computer and communications-based system called the Traffic and Criminal Software System (TRaCs). This software is designed for multi-jurisdictional use and was built in modules allowing for great flexibility. It has many potential uses including the automated on-site collection of all traffic collision data, ticketing and commercial vehicle inspection. The demonstration is designed to verify the flexibility of the software and its application within several police operated record management systems and computer assisted dispatch systems.

Currently, participating police agencies and commercial vehicle inspectors in Alberta are using the developed data collection software and forms for crashes, citations and commercial vehicle inspection. Integration with motor vehicle registration databases allowing for the auto-population of data elements is also being achieved. The demonstration project is intended to provide a national focus for the development of uniform automated data collection performance standards leading to improved efficiencies, quality and timeliness of traffic collision data.

RESEARCH ACTIVITIES IN ITS

Memorandum of Understanding (MOU) Concerning In-vehicle Telematics

Transport Canada is now developing a memorandum of understanding (MOU) to be entered into with automotive manufacturers and dealing with the safety of in-vehicle telematics devices. The key element of this MOU is a collaboratively developed process-oriented safety standard that is supported by industry experts and by the general public. This type of standard is favoured over the more typical prescriptive approaches that have proven ineffective at setting limits on distraction across a diverse range of technologies. It outlines the general principles and process elements that should underpin the product's design, development, evaluation, manufacture, and installation. The focus is on the systems and procedures that a manufacturer should establish and follow during product development and implementation cycle in order to ensure that on-board telematics devices reflect best practices and minimize potential risk and likely misuse. The MOU will address safety concerns, be adaptive to continued technological advancement, and not unnecessarily burden the industry.

Evaluation of Industry Safety Principles for In-vehicle Information and Communication Systems

This project aims to evaluate compliance of advanced in-vehicle information and communication systems to the Alliance of Automobile Manufacturers (AAM) safety principles. In-vehicle information and communication systems, also known as telematics systems, from four leading manufacturers are being evaluated according to the most recent guidelines

from the AAM document "Statement of Principles, Criteria and Verification Procedures on Driver Interactions with Advanced In-Vehicle Information and Communication Systems". Results will provide insight into how the current automotive industry standard for telematics systems rate on these new criteria. The project will also independently assess the value of these industry guidelines and use these results as benchmark data on which to assess the safety developments of future telematics systems.

Validation of the HASTE (Human Machine Interface and the Safety of Traffic in Europe) Protocol Specification (Work Package 3)

Considerable research activity in both North America and Europe is currently focused on producing protocols for assessing the distraction potential of in-vehicle tasks and devices. The current state of methodologies for assessing the safety implications of these devices is unsatisfactory. The aim of HASTE (Human Machine Interface and the Safety of Traffic in Europe) was to develop methodologies and guidelines for the assessment of in-vehicle information systems. The major limitation of the current tools and metrics is that they do not permit judgments about the safety of using a particular device while driving to be made in a straightforward fashion. Project HASTE is an EU Project involving the cooperation of eight partners (7 European and 1 Canadian (Transport Canada)) in a concerted effort to address this issue.

Transport Canada and the other project partners recently completed the final experiments in this 3-year project. The objective of these experiments was to validate the devised measures and scenarios found in WP2 by applying them in the assessment of three actual in-vehicle information systems and tasks as well as one prototype system for traffic information

The project will be wrapping up in 2005 with only some final analyses, meetings and reports remaining. On March 22, 2005, a workshop with representatives from government, industry and research is being held in Brussels to present the results of the project and what was learned. The outcomes from this workshop will be included in the final report to be submitted to the European Commission (DG-TREN) later this year.

CRASHWORTHINESS RESEARCH

Frontal Crash Protection

Transport Canada is examining the crash performance of advanced air bag systems for the complete suite of adult frontal dummies in full frontal rigid barrier (FFRB) tests as well as for small females in offset deformable (OFDB) tests. Advanced monitoring capabilities include multi-point sensing for the thorax of the small female and mid-sized male and fully instrumented lower legs for both the small female and mid-sized male. Additional state-of-the-art high-speed cameras have been added to the on-board video monitoring system increasing the number and quality of the views. Current analysis is focusing on new vehicle models that meet the FMVSS 208.

The frontal crash protection research programme has a new study to investigate the effects of increased test speed on dummy response and vehicle design. FFRB tests are being conducted with identical vehicle models at 40, 48 and 56 km/h to compare vehicle response, load cell wall response, dummy chest load characteristics and lower extremity injury risk. Preliminary results are expected within the year.
The rear seat occupant protection study continues to be carried out in conjunction with all FFRB tests and OFDB tests conducted at 40 km/h and 56 km/h. The effectiveness of three-point belts installed in all rear seating positions of late model vehicles are being evaluated with the Hybrid III 5th female, 10-year-old and 6-year-old child dummies. Direct comparisons are being carried out between the chest response of a right rear seated small female to the front right seated small female passenger. The booster seat study, initiated to examine the protective effectiveness of a variety of booster seats and child restraints for the larger children has evolved to include a study evaluating the effectiveness of using the Lower Anchors and Tethers For Children system (LATCH) and tether anchorages in combination with booster seats. An evaluation of the protective qualities of child restraints for larger size children has also been initiated. Preliminary results for this programme are reported in the 2005 ESV proceedings.

Side Impact Crash Protection

The side impact crash protection programme examining barrier-to-car and car-to-car tests continues to advance. Since June 1999, Transport Canada has conducted over 44 barrier-to-car tests including the new Insurance Institute for Highway

Safety (IIHS) side impact barrier, developed by the IIHS; 29 SUV-to-car crash tests; and 9 car-to-car collisions, in addition to a number of tests conducted with the existing FMVSS/CMVSS 214 barrier, EEVC barrier or modifications thereof. These studies conducted in support of the International Harmonization Research Activities (IHRA) Side Impact Working Group have been referenced in the drafting of the proposed side impact procedures. Results have also been shared with vehicle manufacturers, to enhance partnerships with industry and encourage the implementation of safety system improvements in advance of regulations.

Evaluation of the IIHS barrier and comparison to the striking face of new emerging cross-over vehicles is in progress. LTV-to-car crashes are continuing in support of the IHRA Compatibility Working Group. Transport Canada has initiated a pole test programme comparing perpendicular and oblique pole test configurations. A comparison of WorldSID and the ES-2re responses is also underway. The results of three paired oblique and perpendicular pole tests and two paired WorldSID / ES-2re oblique pole tests are reported in the 2005 ESV proceedings.

The monitoring of new side air bag technologies continues to be an important element of the side impact protection programme. The interaction between deploying side air bags and the dummy arm is being examined. The causes of incorrect curtain deployments are being investigated and non-invasive methods for the accurate sensing of side curtain deployments are being explored.

Dummy Development

Transport Canada, in co-operation with the Occupant Safety Research Partnership (OSRP) and the WorldSID Task Group continues to actively participate in dummy evaluation programmes. Biofidelity tests including body drop and pendulum impacts in addition to in-vehicle testing have been completed for the ES-2 the ES-2re WorldSID, SID-IIs and Q3s side impact dummies. An extensive study comparing the effects of differences in geometrical and stiffness characteristics of the Denton and FTSS 5th female dummy chest jackets on chest response has just been completed. The results are expected to be published in 2005.

Transport Canada successfully conducted its first far side crash to evaluate the WorldSID performance in far side impacts. Full-scale accident reconstructions with the Q3s and WorldSID will be completed in the coming months.

Improvements in Test Capabilities

Transport Canada has, in collaboration with PMG Technologies, established a state-of-the-art test facility characterized by a dedicated team of trained specialists, the latest in video graphic capabilities, data acquisition and advanced dummy technologies. In 2003, Transport Canada acquired a load sensing wall, now used in all FFRB crashes to gain a better understanding of structural changes in emerging vehicle fleets and to contribute to IHRA frontal compatibility research efforts. Construction is underway to expand interior crash testing and vehicle preparation capabilities, making outdoor crash testing during intemperate weather a thing of the past. A new lighting system is being installed to accommodate interior side impact crash testing and facilitate video recording of the crash events.

CRASH AVOIDANCE RESEARCH

Evaluation of Electronic Stability Control (ESC) on Motor Vehicles

A study was initiated to evaluate the performance of Electronic Stability Control (ESC) systems in Canada. Testing was performed on commercial vehicles in June 2004 and on passenger vehicles in October 2004. Preliminary analyses of test data appear to confirm that ESC has the potential to reduce the number of collisions resulting from loss of control. Significant differences in the threshold at which different ESC systems intervened were observed, as were differences in the degree of intervention. Vehicle loading, and whether the pavement was wet or dry, did not appear to significantly affect the test results.

In future planned studies, a Programmable Steering Controller, which allows tests to be performed in a more controlled and repeatable manner, will be used to further evaluate the performance of ESC. A study to determine the effectiveness of ESC in reducing collisions in Canada is also planned. Although this type of study has been performed elsewhere, we are interested in determining whether results of previous studies also apply to Canada, with its diverse climate and road infrastructure.

Speed Control

Excess speed is an acknowledged road safety problem. Speeding is a complex issue that involves significant interactions between the driver, the vehicle, the roadway, and the environment. Transport

Canada is currently conducting a research programme on speed management to investigate measures to influence vehicle speeds in terms of their potential impact on road safety and greenhouse gas emissions (GHG).

Work is being undertaken in a number of areas. The first is the development and testing of a Canadian Intelligent Speed Adaptation (ISA) system. Trials in Europe have shown the use of this technology to be effective in reducing collisions and fuel consumption. The first vehicle will be instrumented and demonstrated in 2005 followed by a few vehicles in the field in early 2006. The second area of research concerns information provided to the driver, which may or may not alter behaviour. This would build on the current fuel efficiency devices in some vehicles to provide meaningful data to drivers and to assess the potential to influence driver speed choice. The third area involves using modelling and simulation to better understand the impact of speed controls on safety and GHG emissions. The fourth area of research will examine drivers' behaviours and attitudes about speeding.

INTERNATIONAL ROAD RESEARCH

Transport Canada has participated for many years in the OECD Road Transport Research Program. Recent studies include examinations of rural road safety, performance indicators for the road sector, ageing and transport, keeping children safe in traffic, road travel demand, strategies to reduce greenhouse gas emission, and transport logistics. The RTR program recently merged with the ECMT research function to form the joint OECD/ECMT Transport Research Centre. Transport Canada continues to play a leading role, and currently is participating in research initiatives concerning young drivers, speed, long life pavements, and achieving ambitious road safety targets. The results of these studies will be available in 2006.

REGULATORY INITIATIVES

Locking and Immobilization Systems – MVSR 114

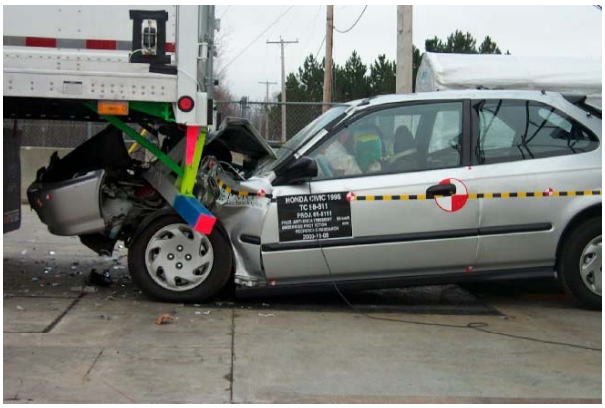
Vehicle theft can be viewed as a crime for profit or for convenience. The latter was deemed a road safety concern, as 27 fatalities and 117 injuries occurred yearly in Canada from young, inexperienced, risk-taking drivers. These events would too often involve a youth stealing a vehicle for joyriding or for convenience. Anti-theft immobilization devices are systems that assist in preventing the unauthorized use of a vehicle. Such a device, when armed, prevents the activation of a control unit, such as the engine control unit, the fuel control unit or the ignition control unit. In order to disarm the system, a coded key, a keypad or a remote device is required.

After much consultation with the interested stakeholders and several assessments of the effectiveness of these systems, the department has amended MVSR 114 to require the fitment of immobilization systems on all vehicles as of September 1, 2007. Accordingly, all vehicles with a gross vehicle weight rating less than 4,536 kg have an immobilization system installed that, at the choice of the manufacturer, meets one of the following standards:

- National Standard of Canada CAN/ULC-S338-98, entitled Standard for Automobile Theft Deterrent Equipment and Systems: Electronic Immobilization (May 1998), published by the Underwriters' Laboratories of Canada (ULC); or,
- Part III of the United Nations Economic Commission for Europe (UNECE) Regulation No. 97, entitled Uniform Provisions Concerning the Approval of Vehicle Alarm Systems (VAS) and of Motor Vehicles with Regard to Their Alarm Systems (AS), dated October 14, 2002.

Rear Impact Guard – MVSR 223

A regulation governing the installation of rear impact guards on trailers was registered on September 23, 2004. While the dimensional requirements remain consistent with the existing U.S. regulations (FMVSS 223/224), the strength and energy absorption requirements for the guard are significantly higher. Research has shown that these criteria will have the effect of reducing the amount of vehicle underride and passenger compartment intrusion in the event of a rear impact, and is expected to save more than two lives every year.



The main issues voiced by stakeholders during the consultation process included the competitive disadvantage that could result from a regulation that is not harmonized with the U.S., and the new energy absorption criteria that is unique to the Canadian proposal. Despite these comments, there was a general consensus with respect to the benefits of a stronger guard.

The department has strived to balance the safety of the occupants of small vehicles and industry concerns while maintaining close harmony with the existing requirements for U.S. trailers. In this effort, the department worked closely with industry to design a generic guard that would assure compliance to the regulation, thereby eliminating compliance testing for trailers so-equipped and reducing manufacturers' costs.

Three-Wheeled Vehicles and Enclosed Motorcycles

On July 24, 2003, the department introduced two new vehicle classes to address the unique characteristics of vehicles designed to travel on three wheels and for enclosed motorcycles. Two new regulations specific to these new vehicle classes were also introduced: MVSR 505 to address the minimum stability requirements for three-wheeled vehicles and MVSR 301.3 regarding the fuel system integrity requirements for three-wheeled vehicles and motorcycles.

Prior to this amendment, most three-wheeled vehicles and enclosed motorcycles would have had to be classified and regulated as a passenger car. This classification requirement essentially eliminated these vehicles from the Canadian market. There has been a renewed interest in developing three-wheeled passenger vehicles that will provide a safer alternative to motorcycle transportation while providing environmental benefits. These new vehicle classes and regulations were developed following a review of current world safety regulations including those in Australia, Europe and the U.S. For example, the motorcycle fuel system integrity requirement provides the manufacturer with the choice of meeting either the European Directive 97/24/EC, "Fuel Tanks for Two and Three-Wheel Motor Vehicles" or the Society of Automotive Engineers SAE J1242, "Fuel and Lubricant Tanks for Motorcycles".

It is expected that these new vehicle classes will allow the industry to provide Canadians an innovative, safe and efficient means of transportation.

Fuel System Integrity - MVSR 301

The purpose of this amendment was to upgrade the rear and side impact test requirements of (CMVSS) 301 "Fuel System Integrity" to better protect vehicle occupants from fuel spillage and fires that may result from a collision, and harmonize the Canadian regulatory requirements with those of the U.S.

In the event of a crash, preserving fuel system integrity to prevent occupant exposure to fire is critical. In Canada, between 1994 and 1999, an average of 320 occupants per year were exposed to fire in passenger cars and light vehicles. These statistics underscore the importance of preserving fuel system integrity in a crash in order to prevent vehicle fires.

The amendment increases the crash test requirements for fuel systems in rear impact and side impact tests. Previously, CMVSS 301 required vehicles to withstand a rear end collision of 48 km/h without spilling a dangerous amount of fuel. The new requirement increases the speed of the collision to 80 km/h. Similarly, the testing requirement for side impact collisions has increased to 53 km/h, from 32 km/h.

This regulation was published in April 2004, and it is estimated that 1 to 2 lives will be saved annually.

Alternative Requirements for Headlamps – MVSR 108.1

Transport Canada has updated this regulation to include the recent development in regulatory text of the ECE Regulations regarding motor vehicle road illumination devices. MVSR 108.1 allows headlamps designed in accordance with United Nations Economic Commission for Europe (UNECE) Regulations as an alternative to the North American or Society of Automotive Engineers (SAE) beam pattern headlamps specified in MVSR 108. MVSR 108.1 also refers to certain additional provisions of Technical Standard Document (TSD) No. 108, notably those concerning the aiming and durability of headlamps.

GLOBAL AGREEMENT

The 1998 *Agreement Concerning the Establishment of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts, which can be Fitted and/or be Used on Wheeled Vehicles* was negotiated and concluded under the auspices of the United

Nations Economic Commission for Europe (UNECE). For many years Transport Canada participated in several UNECE working groups related to the development of international automotive safety regulations. The department's experts made sure that Canadian concerns were addressed in developing international regulations and at the same time they brought back home new ideas to improve safety of motor vehicles available to Canadian drivers. Canada was the first country to sign the 1998 Agreement that came into force on August 25, 2000. Since then the department has initiated and is now sponsoring the development of three global technical regulations.

Global Technical Regulation (gtr) regarding location, identification, colour, and illumination of motor vehicle hand controls, tell-tales and indicators

The purpose of this gtr is to design and ensure the accessibility and visibility of vehicle controls, tell-tales and indicators, and to facilitate their selection under daylight and night-time conditions in order to reduce the safety hazards caused by the diversion of the driver's attention from the driving task and by mistakes in selecting controls.

Global Technical Regulation (gtr) regarding installation of lighting and light signalling devices

This gtr would specify requirements for the location, geometric visibility and operation (electric connection) of lighting and light-signalling devices installed on road vehicles.

The purpose of this gtr is to ensure the effectiveness, visibility (both in daylight and darkness or other condition of reduced visibility) and functioning of lighting and light-signalling devices in order to reduce the safety hazards caused by a) inadequate illumination of the roadway or glare caused by vehicle lighting devices and b) confusion and diversion of the driver's attention from the driving task caused by miscomprehension of information from the vehicle's light-signalling devices as they relate to presence, identification and/or behaviour of the vehicle on the road.

Transport Canada anticipates being in a position to finalize the text of the proposed gtr based on the discussion during GRE sessions by the end of 2005.

Global Technical Regulation (gtr) on motorcycle brake systems

Motorcycle brake system regulations have not kept pace with the advancement of modern technologies. With the improvement of disc brake systems and the recent introduction of new technologies such as anti-lock brake systems (ABS) and combined brake system (CBS), modern motorcycles can be equipped with very sophisticated and effective braking systems.

The development of a gtr on motorcycle brake systems is intended to reduce the injuries and fatalities associated with motorcycle accidents. Transport Canada believes that it is time to update the current standards with a harmonized regulation, based on the best practices within existing national regulations, while taking into consideration modern brake system technologies that could improve rider safety.

In an effort to select the most stringent performance requirements for a gtr, the informal group studied the relative severity of three national motorcycle brake system regulations, comparing the UNECE Regulation No. 78, the U.S. FMVSS 122 and the Japanese Safety Standard JSS 12-61. Based on these studies, an outline of the more stringent performance requirements for motorcycle brake systems was drafted, which was presented at the 57th GRRF on February 3, 2005.

The finer details of the contents of the gtr are presently being discussed and a draft text is expected for presentation to GRRF in September of 2005. A final version is scheduled for consideration at AC.3 and WP.29 in 2006.

Universal Anchorages for Children's Restraint Systems – CMVSS 210.2 and the Restraint Systems Safety Regulations

The effectiveness of properly used children's restraint systems is well recognized. Unfortunately users may encounter difficulties in installing the restraint system into the vehicle or the child into the restraint correctly. To minimize improper installation of restraint systems in vehicles, Transport Canada finalized a new requirement for the installation of universal lower anchorages in vehicles and of compatible connectors on infant and child restraints. The final regulations were published in the Canada Gazette Part II on June 19, 2002 and came into force on September 1, 2002. It is estimated that approximately 12 fatalities and 294 injuries to children from birth to 5 years of age will be prevented each year by this countermeasure.

The universal anchorages and compatible connectors requirements complement the top tether anchorage regulation. Canada first introduced the tether anchorage requirements in 1989. More recently, the department upgraded the original requirements to include user-ready tether anchorages for passenger cars built after September 1, 1999 and light trucks and multi-purpose passenger vehicles since September 1, 2000.

Coach And School Bus Occupant Protection Review

The current crash protection for school bus occupants in Canada is a passive safety approach based on closely spaced high backed seats that are designed to absorb energy during a collision. Canada has in place regulations that require rigorous testing of school bus seats for this passive protection. This approach has been extremely effective in reducing occupant fatalities.

A regulatory development and research programme is being conducted to determine the effectiveness of different occupant protection systems for both coaches and school buses. This activity may lead to the development of standards to further increase the safety of those vehicles. The first phase of this program, a survey of the international situation with respect to occupant protection in buses, has been completed. The study report, entitled "*Evaluation of Occupant Protection in Buses* TP 14006" dated June 2002 is available in both French and English on the department's website at www.tc.gc.ca/roadsafety/tp/tp14006.

The second phase of the program, which is currently underway, involves testing of three-point belt equipped coach seats from Europe and Australia and newly developed school bus seats incorporating passive protection with three-point belts. The three-point belt equipped coach and school bus seats will be tested on an acceleration sled and by using static pulls. The sled tests will involve various seating configurations with restrained and unrestrained anthropometric test devices. The static pull tests will be completed applying the same forces measured during the sled tests.

The third phase of the program will focus on glazing designs, including glazing retention as a result of occupant loading and issues surrounding the use of windows as emergency exit requirements.

Current Status – Side Impact Memorandum of Understanding

While side air bags have the potential to reduce injuries to properly restrained occupants - both adults and children - in side impact collisions, the department was concerned that Out-Of-Position (OOP) occupants could be at increased risk should a collision occur. Thus, in February of 2001, the department and the automotive manufacturers signed a Memorandum of Understanding (MOU) which set out the general terms and conditions with regard to side impact protection applicable to passenger cars, multipurpose passenger vehicles, trucks and buses with a gross vehicle weight rating of 2,722 kg (6,000 lbs) or less.

The MOU was based on the extensive research, testing and collision investigation of side impacts and side air bags that the department had completed. The MOU includes four requirements:

- Vehicles built during or after the 2002 model year, meet the requirements of either U.S. FMVSS 214, "Side Impact Protection," or United Nations ECE Regulation No. 95, "Uniform Provisions Concerning Approval of Vehicles With Regard to the Protection of the Occupants in the Event of a Lateral Collision"; and
- Vehicles meeting the requirements of United Nations ECE Regulation No. 95 will maintain or, where possible, improve rear seat occupant side impact protection; and
- Vehicles which incorporate side air bag systems be designed according to the "Recommended Procedures for Evaluating Occupant Injury Risk

from Deploying Side Airbags" dated August 8, 2000; and,

- Upon request the manufacturer will identify to the department each new model vehicle equipped with side air bag systems designed according to the recommended procedures and upon request provide data demonstrating that future side air bag systems have been designed according to the recommended procedures.

This is the first occasion in which Transport Canada has used an MOU to introduce new requirements. This non-regulatory programme was achieved through the collaborative efforts of industry and government. As part of the MOU the manufacturers agreed to introduce these requirements as soon as was feasible for each manufacturer, but at the very latest, future systems designed according to these procedures were to be integrated into vehicle programs with design commitment or "design freeze" dates occurring approximately 18 months after the date of execution of this MOU.

Electronic Belt fit Test Device (eBTD) Memorandum of Understanding

Under development since 1982, a physical Belt fit Test Device (BTD) was produced in order to measure how well a seat belt fits the human body. Sternum, clavicle and thigh/abdomen scales were inscribed on biofidelic chest and lap forms, which were mounted on standard SAE “H” point machines.

This device was referenced in a 1995 proposal for regulatory change but was withdrawn when it was recognized that the objectives could be better served by initiating proper belt fit earlier in the automotive design process. Several years were invested in developing an electronic version of the Belt fit Test Device.

The creation of this software programme and validating its utility and accuracy required a large effort on the part of manufacturers and Transport Canada. An MOU expressing the intent of manufacturers to use this tool to verify the proper fit of seat belts in the front seats of passenger cars and light trucks is being prepared for signature and will represent a milestone in the development of electronic tools to verify compliance with a standard.